

ABSTRACT

A catalyst for manufacturing synthesis gas has a carrier and a Group VIII metal carried by the carrier. The carrier contains a first ingredient, a second ingredient and a third ingredient. The first ingredient is an oxide of at least an alkaline earth metal selected from the group of magnesium, calcium, strontium and barium. The second ingredient is an oxide of at least an element selected from the group of scandium, yttrium and lanthanoids. The third ingredient is zirconia or a substance containing zirconia as principal ingredient and has a solid electrolytic property. The carrier may be formed by forming an overcoat film on a substrate by coating. Then, the overcoat film contains the above three ingredients. A catalyst according to the invention can remarkably reduce the dimensions of the reaction facility and improve the energy efficiency of the facility.